UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/030,710	02/25/1998	PETER C. CHEN	M-3206-1C	7700

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EXAMINER
DINH, DUNG C

ART UNIT	PAPER NUMBER
2153	

DATE MAILED: 04/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/030,710	CHEN, PETER C.
	Examiner	Art Unit	
	Dung Dinh	2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _04 December 2003_.
2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-4,6-10,17-19,21-28,30-35 and 38-45_ is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) _1-4,6-10,17-19,21-28,30-35 and 38-45_ is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All   b) ☐ Some * c) ☐ None of:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____.
      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 12/4/03 have been fully

considered but they are not persuasive.

I.   Applicant argued that 112 second paragraph rejection of

claims 24, 33 and 43 is improper because one of ordinary skill

in the art would understand the meaning of the phrase 'non-

standard interface'. The argument is not persuasive because the

claims are rejected for failure to definitely claiming the

invention. The word 'non-standard' is a relative term which

renders the claims indefinite because it varies over time.

The specification does not provide any means to determine

an interface that would meet the limitation of a non-standard

interface as claimed. It is unclear what/when an interface

would meet the claimed 'non-standard' interface. An interface

may not be widely used at one point in time (therefore is a non-

standard interface?) but might be popular and widely used in the

future (therefore a standard interface?). A concrete example is

the USB interface. This interface was not widely used at the

time of the invention. However, it is virtually in all

computers today. Is this interface a standard or non-standard

interface according to the language of the claim? Another

example is the AT-keyboard interface, which was standard in

virtually all PC's, but is now obsolete. PC's now use PS/2 or

USB keyboard interface. Is the AT-keyboard interface a

'standard' or 'non-standard' interface according to the claim

language?

II. Applicant argued that Suffern and Bailey cannot be combined

because Bailey's goals is to reduce CPU load where Suffern's

invention increases CPU load. The argument is not persuasive.

Suffern's invention is a reduced cost modem that replies on

the host computer CPU for processing of the modem functions,

much similar if not the same as Applicant's 'software' modem.

Suffern's specification discloses sample software routines

implemented on a host computer for performing modem signal

processing and controlling the modem. One of ordinary skill in

the art would clearly see that the software disclosed by Suffern

are no more than example software routines for the engineer to

'play' with the modem. (See col.18 lines 45-50).

It is well known in the art that a new device needs a

device driver to enable the device to be used by existing

Operation System and Application programs. (See definition of

'device driver' from Whatis.com attached herein). Suffern does

not disclose a device driver for the modem.

Bailey teaches an external modem that connected to the host computer in a parallel port instead of the usual serial port. Bailey provides a device driver for running on the host computer that emulates a UART such that Bailey's external modem look like a normal modem connected to the serial port. (See col.7 lines 50-68).

Although Bailey's goal for having the external modem is to reduce CPU load on the host computer and Suffern's modem demands more CPU load on the host computer, both Bailey's and Suffern's modems face the same problem - making a non-conventional modem works like a conventional modem to the Operating System and Application Software.

Since Suffern did not disclose a device driver, one of ordinary skill in the art would have been motivated to use the teaching of Bailey to implement a device driver for Suffern's modem. The rationale is that it would have enabled Suffern's modem to look like a normal modem to the Operation System and Application programs such that Suffern's modem can be used without modification to the Operation System or the Application programs.

Hence, the fact that Bailey's inventive modem is for reducing load on the CPU, whereas Suffern's inventive modem is to reduce cost but increases load on the CPU, is not relevant to

the obviousness to combine the references. Bailey clearly shows

the need for a device driver that emulates a UART and various

serial handshaking protocols so as to enable existing Operating

System and Application programs to work with a `non-standard'

modem. Both Bailey's and Suffern's devices are `non-standard'

modems; hence the teaching of Bailey is relevant, and the

combination of Bailey with Suffern is proper.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35

U.S.C. 112:

> The specification shall conclude with one or more claims
> particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his
> invention.

Claims 24, 33, and 43 is rejected under 35 U.S.C. 112,

second paragraph, as being indefinite for failing to

particularly point out and distinctly claim the subject matter

which applicant regards as the invention.

The term "non-standard input/output interface" is

indefinite. The term `non-standard' is a relative term. What

constitutes as `standard' or `non-standard' varies over time.

Hence, what is included or excluded from the term "non-standard

input/output interface" is indefinite.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103(a) which
forms the basis for all obviousness rejections set forth in this
Office action:

> (a) A patent may not be obtained though the invention is
> not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the
> subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject
> matter pertains. Patentability shall not be negatived by
> the manner in which the invention was made.

Claims 1-2; 4, 6-9; 17-18, 23; 19, 21-22; 24-28; 30-32, 33,

35, 38-42, 43-45 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Suffern et al. US patent 5,646,983 and further

in view of Bailey et al. US patent 5,644,593.

As per claim 1, Suffern teaches a system comprising:

a computer having a processing unit [fig.3 Microprocessor

22], a main memory [24] and a local bus [28];

a device [fig.3 interface card 15] coupled to the local bus,

wherein the device occupies an I/O slot on the local bus [col.3

lines 25-30] and is accessible at a first set of addresses

corresponding to a first communication port [see from col. 8 lines

15-18, since the device occupies addresses of one of the COM

ports];

the device has a register set [fig.3 counter 70, control unit

50, latch 74,80,54 and shift register 43] different than a

register set for a UART [since the device does not have convention

processing and interface of a standard modem, its interface must

be differ from a UART for a standard modem].

Suffern does not teach a communication driver with UART

emulation as claimed. Suffern only discloses sample codes for

interfacing to the device 15 and how to perform the DSP function

using the computer's processor. Suffern does not disclose how to

interface the device 15 such that the device 15 can be used by

conventional application software and operating system.

Bailey discloses a method for enabling application software

to communicate with a modem, connected in a non-standard way, by

providing a device driver with UART (serial interface) emulation

and redirecting the communication between the operation system and

the modem [see col. 5 lines 29-31, col.13 lines 5-10, col.16 lines

24-36]. The UART emulation fools application software and

operating system to see the modem as if it is connected to a

conventional port [col.5 lines 45-48].

Hence, it would have been obvious for one of ordinary skill

in the art to provide a communication driver with an UART

emulation and communication redirection with Suffern device 15 because it would have enabled the communication driver to fool the application software and operating system into seeing the device 15 like a conventional modem. This would have enabled the device 15 of Suffern to be used by existing application software and operating system.

As per claim 2, it is inherent that the local bus comprises an ISA bus since Suffern uses an IBM-compatible personal computer. ISA bus was well known and widely used at the time of the invention. Hence, it would have been obvious for one of ordinary skill in the art at the time of the invention to have ISA local bus because it would have maintained compatibility with large number of computers at that time.

As per claim 4, 7-8, they are rejected under similar rationale as for claim 1 above. Bailey teaches allocating memory of the computer for storing data corresponds to registers of a UART, transmitting and updating value in the storage locations [col.16 lines 23-36].

As per claim 6, it is apparent that the system as modified would have to have I/O handler for transferring data to/from the driver to the appropriate registers in the device 15 in order for the driver to communicate and transfer data between the computer and the device 15. It would have been obvious for one of ordinary

skill in the art to have such I/O handler because it would have

enable the device driver to handle I/O interrupts and data

transfers between the host computer and the modem device.

As per claim 9, it is inherent that the device 15 of Suffern

is allocated a base address corresponding an I/O slot for a UART

[col. 8 lines 15-18, since the device occupies addresses of one of

the COM ports]. It would have been obvious for one of ordinary

skill in the art to use I/O slot for a UART because it is

convention to allocate modem I/O address to that of a UART (i.e.

COM or Serial port).

As per claim 17, it is rejected under similar rationale as

for claim 1 above.

As per claim 18, it is inherent from Bailey col.16 lines 23-

35 that the serial port emulation would function the same way

whether the access to the UART register is done directly by

application software or by the operating system. It would have

been obvious for one of ordinary skill in the art to emulate the

UART such that it would be access the same way by the OS or the

Application because it would have enable the modem to function

with existing application programs that directly communicate to a

modem instead of though the OS virtual driver.

As per claims 19, it is rejected under similar rationale as

for claims 1. Bailey teaches allocating memory of the computer

for storing data corresponds to registers of a UART, transmitting
and updating value in the storage locations [col.16 lines 23-36].

As per claims 21, Suffern teaches modem software that
implements a conversion between data and digital samples
representing a signal in accordance with a communication protocol
[col.3 lines 45-68].

As per claims 22 and 23, Bailey does not disclosed the
specific registers being emulated. However the recited registers:
line control, status, and modem control are standard in a PC
serial interface. Hence, it is apparent that the system as
modified would have had emulated these registers in order to
provide full compatibility to existing application software.

As per claims 24, and 30 Suffern teaches a device comprising
an analog to digital converter coupable to a communication
medium to receive an analog communication signal [fig.3, fig.4:
device 15];

a computer comprising processing unit coupled to the
device, to receive there from a plurality of sampled digital
values, the processing unit being program with a software modem
to determine data received, based on a waveform represented by
the sample digital values [fig.4 Host computer 20, col.2 lines
6-10].

Suffern does not specifically disclose a device driver for transferring data between the device 15 and an operating system and enabling application software to use the device 15 in the same manner as a standard hardware modem. Bailey teaches a device driver that fools the operating system and application software to see a conventional modem. The obviousness rationale to combine Bailey's driver to Suffern device is as stated for claim 1 above.

As per claim 25, Bailey teaches allocating memory for registers of the emulated UART [col.16 lines 23-36].

As per claim 26, Suffern teaches modem software that implements a conversion between data and digital samples representing a signal in accordance with a communication protocol [col.3 lines 45-68].

As per claim 27, it is well known in the art that a device driver has I/O handler for transferring data from a device hardware register to the computer memory. It is inherent that Suffern as modified would have such an I/O handler in order to transfer data between the device 15 and the computer. It would have been obvious for one of ordinary skill in the art to have such I/O handler because it would have enable the device driver to handle I/O interrupts and data transfers between the host computer and the modem device.

As per claim 28, Suffern teaches analog-to-digital and digital-to-analog converters [see fig.4].

As per claim 31, Suffern teaches using interrupts to reads and transfer data to the adapter card [see col.7 lines 1-10, col.8 lines 15-18].

As per claim 32, it is inherent that the data sent by the software modem to the adapter 15 would have carrier signal and data format according to a standard modem protocol in order to the device 15 of Suffern to function as a modem.

As per claims 33 and 43, Suffern teaches a system essentially as claimed having an I/O device with non-standard interface (modem without a processor and DSP) and a computer processing unit using software to process digital wave signal data from the device which is coupled to the local bus [col.3 lines 45-68]. Suffern does not specifically disclose driver for providing data to an operating system. It is well known in the art to provide a device driver to enable an operating system to communicate to an I/O device. The obviousness rationale is as stated for claim 1 above.

As per claims 35 and 44, Suffern teaches generating digital values and transmitting analog signal using digital-to-analog converter on the device [col.3 lines 60-68].

As per claim 38, it is rejected under similar rationale as for claim 1 above. Suffern teaches using the computer processor

to perform modem DSP functions. Hence, Suffern as modified would have "software modem" for performing the modem DSP functions. It is well known in the art that a device driver has I/O handler for transferring data from a device hardware register into the computer. It would have been obvious for one of ordinary skill in the art to have such I/O handler because it would have enable the device driver to handle I/O interrupts and data transfers between the host computer and the modem device.

As per claims 39-42 and 45, it is apparent that the computer of Suffern has a second device with UART (it is well known in the art that the PC has two standard serial ports COM1 and COM2 each having a separate UART). The limitations recited are inherent in the computer of Suffern's system as modified.

Claims 3, 10, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination Suffern et al. and Bailey and further in view of Gibson et al. US patent 5,640,594.

As per claim 3, Suffern does not specifically disclose a means in the device for assigning a base I/O address to be occupied by the device.

Gibson teaches a device couple to a local bus comprising:

a comparator [fig.4A #312];

a pattern generator [fig.4A SEQ(count)] coupled to the

comparator;

a counter [fig.4A COUNT] operable couple to the comparator

and the pattern generator;

a register [fig.4B #324 accept data for device programming]

coupled to the counter to receive signal from the local bus in

respond to the counter reaching a final state [fig.4A #316].

It would have been obvious for one of ordinary skill in the

art to provide the means above in the modem device of Suffern

because it would have enable the operating system to automatically

assign I/O address to the device.

As per claims 10 and 34, it is rejected under similar

rationale as for claim 3 above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of

the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action

is set to expire THREE MONTHS from the mailing date of this

action. In the event a first reply is filed within TWO MONTHS

of the mailing date of this final action and the advisory action

is not mailed until after the end of the THREE-MONTH shortened

statutory period, then the shortened statutory period will

expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated

from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than

SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Dinh whose telephone number is (703) 305-9655. The examiner can normally be reached on Monday-Thursday from 7:00 AM - 4:30 PM. The examiner can also be reached on alternate Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached at (703) 305-4792.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group 2100 Customer Service whose telephone number is (703) 306-5631.
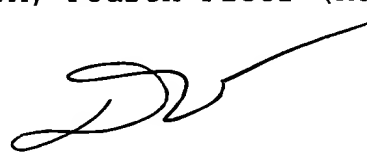
Any response to this action should be mailed to:

    Commissioner of Patents and Trademarks
    Washington, DC 20231

or faxed to:

    (703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA, Fourth Floor (Receptionist).

Dung Dinh
Primary Examiner
April 6, 2004